

DATE: October 22, 2003

TO: Region Engineers
Region Delivery Engineers
TSC Managers
Resident/Project Engineers
Region Construction Engineers
Design Groups
Construction Offices
Consultant Coordination Units

FROM: Larry E. Tibbits
Chief Operations Officer

John C. Friend
Engineer of Delivery

SUBJECT: Bureau of Highway Instructional Memorandum 2003-12
Attenuator Purchasing Program

Beginning with the 2004 construction season the department will adopt a new attenuator purchasing program. This program will be tied to the design, construction and maintenance of attenuators on roadways under MDOT's responsibility. Please review the document entitled "Attenuator Program" (Attachment 1).

It will be the responsibility of the TSC development engineer, as well as project managers to ensure that all plans for the 2004 construction season and beyond include the attached special provision where permanent attenuators are used. The special provision for "**Impact Attenuator - Furnished and Installed**" (Attachment 2) must have the blanks filled in with the correct information, based on the blanket purchase order (BPO) being initiated by the Traffic and Safety and Maintenance Support Areas. The pay item numbers used for this special provision will be 8077060 for the pay item "**Impact Attenuator, Type ____**," and 8077050 for the pay item "**Impact Attenuator Installation**."

It is the responsibility of the TSC delivery staff to receive in writing from the contractor a request for delivery at least 30 days ahead of the tentative install date. The TSC delivery staff is then responsible for faxing an order for the attenuator to the supplier/manufacture (contacts are listed in the special provision) as well as providing the name and phone number of the contractor's contact person. The manufacturer/supplier is then responsible for contacting the contractor to set up a time, date and location for delivery.

TSC delivery staff is also responsible for receiving two certifications. The contractor will certify that they installed the device correctly, and the supplier/manufacture will also certify that the device was installed according to the manufacturer's guidelines and requirements.

The contractor is responsible for the installation of all items specified in the special provision. The contractor will provide payment from a budgeted amount in the construction contract to the

supplier/manufacture for the attenuation unit. Payment will be in the amount authorized by the delivery engineer based on the invoice received from the manufacturer/supplier minus any deductions due to the timeliness of the attenuator delivery.

TSC maintenance personnel and contracted agencies will continue to be responsible for repair and/or replacement of damaged units. The BPO for the purchase of new or replacement units will be in place by January 1, 2004.

Questions about this policy should be address to the Traffic and Safety Support Area, Geometrics Unit, Imad Gedaoun 517-335-2986, or the Barrier Advisory Committee, Bard Lower Chairperson 517-322-3332.

Chief Operations Officer

Engineer of Delivery

Attachments

Index: Attenuators

BOHD:M:CR:BL:ksk

cc: C & T Support Area Staff
Real Estate Support Area, M. DeLong
Design Support Area, M. VanPortfleet
Maintenance Support Area, C. Roberts
Traffic & Safety Support Area, J. Culp
C & T Support Area, B. O'Brien
OEO - S. El Ahmad
B. Lower
C. Rademacher
V. Blaxton
G. Moore
K. Reincke
T. Fudaly, FHWA
MRBA
MAPA
MCPA
MCA
MAA
AUC
CRAM
MRPA
ACEC
MPA

Attachment 1

Attenuator Program Michigan Department of Transportation

Currently MDOT designs and specifies individual attenuators in each contract, based upon the guidance of the Geometric Unit of the Traffic and Safety Division. In 2002 the FHWA asked MDOT to institute competitive bidding for attenuators. This program will provide a format for suppliers to competitively bid on a one or two year Blanket Purchase Order (BPO) for attenuators to be installed in construction and/or maintenance projects.

Funding

Funding for new and upgraded attenuators on new roadway projects shall follow the prescribed funding template percentages for federal, state, and local participation.

Funding for the maintenance or replacement of damaged attenuators shall be from existing Region budgets.

Design

Design of new or upgraded attenuators shall follow the guidelines in Appendix A. The PAY ITEMS for attenuators will change. The new pay item will be "Impact Attenuator – Furnished and Installed."

Construction

The Contractor's responsibilities will be to furnish any pad/foundation for the specified attenuator, install the attenuator, and if required fasten the attenuator to the object to be protected.

The Contractor will provide written certification that the attenuator was installed correctly. The Manufacturer will inspect and verify in writing that the Contractor installed each individual device correctly.

The Contractor will be required to notify the Engineer at least 30 days in advance of their need for delivery of the attenuator. The Engineer will contact the Manufacturer/Supplier of the system to proceed with delivery. The Manufacturer/Supplier will deliver the attenuator to the job site. The Manufacturer/Supplier will provide an invoice to the Engineer. The Engineer will review the invoice, taking into consideration any deductions required, and authorize the Contractor to pay a specific amount to the Manufacturer/Supplier.

Maintenance

Periodic routine maintenance and repair of damaged attenuators will continue to be the responsibility of the Regions.

Upgrading Older Attenuators

Funding for periodic upgrading of older model attenuators must be set aside by the Department. This funding will provide for periodic upgrades of either the entire device or of required parts (every 10 years). If the upgrade falls within three years of a major roadway project the attenuator should be added to the project during the scoping phase.

Purchase of Attenuators

The Department proposes to purchase attenuators by Blanket Purchase Order (BPO). Bids will be by AREA location. The following are the individual AREA locations:

Area 1 - Superior and North Regions
 Area 2 - Southwest and Grand Regions
 Area 3 - University and Bay Regions
 Area 4 - Metro Region

The price of each attenuator will include delivery (FOB) to the project by the manufacturer/supplier, within 14 calendar days of notification to anywhere within an AREA. If the device is not delivered within 14 calendar days of notification, the price paid for the attenuator will be reduced by one thousand dollars per day.

The following types of attenuators will be bid:

1. Attenuator - 24" - Protects object up to 24" in width
2. Attenuator - 30" - Protects object up to 30" in width
3. Attenuator - 35" - Protects object up to 35" in width
4. Attenuator - 69" - Protects object up to 69" in width
5. Attenuator - 90" - Protects object up to 90" in width
6. Self Restoring attenuator - 24" - Protects objects up to 24" in width.
7. Self Restoring attenuator - 36" - Protects objects up to 36" in width.
8. Self Restoring attenuator - 60" - Protects objects up to 60" in width.
9. Self Restoring attenuator - 69" - Protects objects up to 69" in width.
10. Self Restoring attenuator - 90" - Protects objects up to 90" in width.
11. Self Restoring attenuator - 96" - Protects objects up to 96" in width.
12. Self Restoring attenuator - 120" - Protects objects up to 120" in width.

In addition, the supplier will list all spare parts for each attenuator. They will quote a spare part price (FOB) that they will guarantee for the next seven years for that attenuator.

A formula will then be used to determine which contractor is awarded the contract. Award will be by type for all AREAS.

MDOT will buy spare parts for each purchased attenuator from the successful bidder at the agreed upon price for the next seven years (see most favored customer below). The supplier, in return, agrees to provide the spare parts (FOB delivered) for the bid for the same time period.

Since MDOT is the primary purchaser of attenuators in Michigan we expect to be treated as a most favored customer. Subsequent bids showing price reductions for spare parts on the same model, or similar attenuator, will reduce the price for spare parts bid earlier (within the seven year agreement).

Since this is a trial application, the first BPO will only be for one year. In the future all contracts may be for one or two years. Purchasing will be by attenuator design type and area.

Attachment 2

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
IMPACT ATTENUATOR - FURNISHED AND INSTALLED

MNT:BL

1 of 1

C&T:APPR:JKG:BRZ:07-24-03
Revised 10-03-03

a. Description. Take delivery of and install an impact attenuator, furnished by the department, at the location shown on the plans or as directed by the Engineer.

b. Materials. The Engineer will order the attenuator for delivery to the project. The following is provided for information only.

Attenuator Manufacturer/Supplier: _____

Contact Person: _____

Telephone: _____

Construct the foundation, anchor blocks or backup units using Grade P2 or Grade S3 concrete, or as directed by the Engineer.

c. Construction. Inform the Engineer in writing 30 calendar days prior to the anticipated attenuator installation date and provide to the Engineer a contact name and phone number where the attenuator supplier can reach the Contractor when they are ready to deliver. Provide an onsite employee trained in the proper installation of the impact attenuator system. Install the impact attenuator and any required concrete foundation, according to the manufacturer's specifications and details. Provide written certification to the Engineer that the attenuator is installed according to the plans and the manufacturer's specifications and guidelines.

d. Measurement and Payment. The work as described will be measured and paid for at the contract unit price for the following contract items (pay items):

Contract Item (Pay Item)

Pay Unit

Impact Attenuator, Type ____	Dollar
Impact Attenuator Installation	Each

Impact Attenuator, Type ____ is a budgeted amount bid item. The Contractor will be required pay the attenuator supplier an amount authorized by the Engineer. No additional payment will be authorized for administrative costs associated with this item.

Impact Attenuator Installation includes constructing the base pad, foundation, anchor blocks or backup units and installing the attenuator according to plans and the manufacturer's specifications and guidelines.

Appendix A

Please review the following criteria for permanent attenuators:

- A. Attenuators shall be used whenever a standard Type I or II terminal is not appropriate.
- B. All systems meet NCHRP 350, TL-3.
- C. Cross Slope should not exceed 8%.
- D. Longitudinal Slope should not exceed 2%.
- E. If the above grades can not be attained, use a leveling pad.
- F. Any curbs that must remain should be (4") maximum and be sloped.
- G. The width of an attenuator system shall be as narrow as possible while still providing attenuation for the hazardous object.
- H. For additional information regarding attenuator selection guidelines and placement recommendations, please see the 2002 AASHTO Roadside Design Guide, Sections 8.4 and 8.5.

When choosing the type of attenuator to specify, please consider the following attenuator types.

- 1. Attenuator - 24" - Protects object up to 24" in width
- 2. Attenuator - 30" - Protects object up to 30" in width
- 3. Attenuator - 35"/36" - Protects object up to 35" or 36" in width
- 4. Attenuator - 69" - Protects object up to 69" in width
- 5. Attenuator - 90" - Protects object up to 90" in width

6-12 Self Restoring Attenuator

Self restoring attenuators will do everything that the regular attenuators listed above will. This type of attenuator generally costs more, but the repair costs are minimal. These attenuators should be used when:

The history of the site shows that it sustains more than two impacts per year.

Due to site geometrics, it is anticipated that the site will sustains more than two impacts per year.

The distance from EOM to EOM does not leave sufficient room for maintenance crews to work. (Generally less than 16' from EOM to EOM at the front of the attenuator.

An impact indicator shall be used with this type of attenuator.

- 6. Self Restoring attenuator - 24" - Protects objects up to 24" in width.
- 7. Self Restoring attenuator - 36" - Protects objects up to 36" in width.

8. Self Restoring attenuator - 60" - Protects objects up to 60" in width.
9. Self Restoring attenuator - 69" - Protects objects up to 69" in width.
10. Self Restoring attenuator - 90" - Protects objects up to 90" in width.
11. Self Restoring attenuator - 96" - Protects objects up to 96" in width.
12. Self Restoring attenuator - 120" - Protects objects up to 120" in width.

Available Attenuators

SYSTEM	Manufacturer	Length	Width(s)	Redirective (Angled Hit)	Reusable	Self Restoring	# of Bays	Attenuator Type
QUAD GUARD LMC	Energy Absorption	32' - 8"	36" - 90"	Yes	Yes	Yes	11	7, 9, 10
REACT 350	Energy Absorption	30' - 3" *28' - 9" to 34'-9"	36"	Yes	Yes	Yes	9 to 15	7, 8, 11, 12
QUAD GUARD ELITE	Energy Absorption	33' - 4"	24" - 90"	Yes	Yes	Yes	11	6, 7, 9, 10
QUAD GUARD	Energy Absorption	22' - 1" *23' - 6"	24" - 90"	Yes	Yes	No	6	1, 2, 3, 4, 5
TAU-11	Barrier System	26' -10"	35"	Yes	Yes	No	8	3
TRACC – Does not meet the requirements to bid	Trinity	21'-0"	24"	Yes	Yes	No	9	1